

C L A I M S

1. A tyre for vehicle wheels, comprising a tread band (1) having a tread band pattern (2) defined by at least 5 two circumferential portions (3) disposed in axial side by side relationship, at least one of said portions having a first geometric module (4) repeated many times along a circumferential extension direction (X) of the tyre and comprising:
 - 10 - an elongated ridge (8) bounded by two grooves (9) oblique to the circumferential extension direction (X), and divided into a plurality of intermediate blocks (10) with respect to an axial extension direction (Y) of the tread band (1), which are delimited by a
 - 15 plurality of cuts (11) substantially transverse to the elongated ridge (8);
 - at least two shoulder blocks (5) associated with the elongated ridge (8), circumferentially aligned along a side edge (6) of the tread band (1) and bounded by 20 grooves (7) oriented transversely to the circumferential tyre extension (X).
2. A tyre as claimed in claim 1, further comprising at least one circumferential groove (26) separating said 25 circumferential portions (3) of the tread band pattern (2).
3. A tyre as claimed in claim 2, wherein the circumferential separating groove (26) is spaced apart 30 from the equatorial plane of the tyre.
4. A tyre as claimed in claim 1, wherein the oblique grooves (9) have an inclination included between 15° and 35° relative to the circumferential direction (X).

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5. A tyre as claimed in claim 1, wherein the transverse grooves (7) have an inclination included between 75° and 105° relative to the circumferential direction (X).
- 5 6. A tyre as claimed in claim 1, wherein the tread band pattern (2) further comprises at least one circumferential shoulder groove (21) separating the elongated ridges (8) from the shoulder blocks (5).
- 10 7. A tyre as claimed in claim 1, wherein said intermediate blocks (10) each have a substantially trapezoidal shape.
- 15 8. A tyre as claimed in claim 1, wherein the elongated ridge (8) has a swollen axially internal end (22) in which at least two centre blocks (23, 24) circumferentially aligned with each other are defined.
- 20 9. A tyre as claimed in claim 8, wherein the centre blocks (23, 24) have a substantially trapezoidal shape.
- 25 10. A tyre as claimed in claim 9, wherein the centre blocks (23, 24) are bounded by transverse cuts (25) converging into a circumferential separating groove (26) interposed between the circumferential portions (3) of the tread band pattern (2).
- 30 11. A tyre as claimed in claim 1, wherein the two shoulder blocks (5) associated with the elongated ridge (8) have the same circumferential size (C).
12. A tyre as claimed in claim 1, wherein the two shoulder blocks (5) associated with the elongated ridge (8) have different circumferential sizes (C).

13. A tyre as claimed in claim 1, wherein the two shoulder blocks (5) associated with one of the elongated ridges (8) have different circumferential sizes (C) than the two shoulder blocks (5) associated with at least one of the adjacent elongated ridges (8).

14. A tyre as claimed in claim 1, wherein the elongated ridge (8) has an axially external end (13) substantially in axial alignment with one of said shoulder blocks (5).

15. A tyre as claimed in claim 14, wherein the axially external end (13) of the elongated ridge (8) is defined by an end block (14) having a substantially trapezoidal shape.

16. A tyre as claimed in claim 14, wherein the first geometric module (4) further comprises an auxiliary block (15) disposed circumferentially close to the axially external end (13) of the elongated ridge (8).

17. A tyre as claimed in claim 16, wherein the auxiliary block (15) is substantially in axial alignment with one of said shoulder blocks (5).

18. A tyre as claimed in claim 16, wherein the auxiliary block (15) is delimited by a first (16) and a second (17) branches of the oblique groove (9), each of them opening into one of said transverse grooves (7).

19. A tyre as claimed in claim 18, wherein each of said first (16) and second (17) branches is substantially in alignment with one of the transverse grooves (7).

20. A tyre as claimed in claim 16, wherein the

auxiliary block (15) has a substantially trapezoidal shape.

21. A tyre as claimed in claim 17, wherein the shoulder 5 block (5) associated with the axially external end (13) of the elongated ridge (8) has a circumferential size (C_1) greater than the circumferential size (C_2) of the shoulder block (5) aligned with the auxiliary block (15).

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22. A tyre as claimed in claim 17, wherein the shoulder block (5) associated with the axially external end (13) of the elongated ridge (8) has a circumferential size (15) (C_3) smaller than the circumferential size (C_4) of the shoulder block (5) aligned with the auxiliary block (15).

23. A tyre as claimed in claim 1, wherein the cuts (11) transverse to the elongated ridge (8) are comprised of 20 first cuts (11a) substantially perpendicular to the circumferential extension direction (X), and second cuts (11b) substantially perpendicular to the oblique grooves (9).

25 24. A tyre as claimed in claim 23, wherein the first cuts (11a) and second cuts (11b) are disposed in an alternate sequence along a major extension direction (Z) of the elongated ridge (8).

30 25. A tyre as claimed in claim 1, wherein the tread band (1) further has a plurality of sipes (27).

26. A tyre as claimed in claim 25, wherein the sipes (27) are formed on each geometric module (4) in a 35 mainly axial extension.

27. A tyre as claimed in claim 25 or 26, wherein each of the sipes has a sawtoothed profile.

28. A tyre as claimed in claim 25, wherein the tread band (1) further has a plurality of connecting notches (28) between the sipes (27).

29. A tyre as claimed in claim 1, wherein the shoulder blocks (5) each have a first series (29) of sipes (27) having a sawtoothed profile and disposed parallel to each other according to an extension substantially parallel to the transverse grooves (7).

30. A tyre as claimed in claim 1, wherein the intermediate blocks (10) each have a second series of sipes (27) having a sawtoothed profile and disposed parallel to each other in a mainly axial extension.

31. A tyre as claimed in claim 8, wherein the centre blocks (23, 24) each have a third series (31) of sipes (27) having a sawtoothed profile and disposed parallel to each other in a mainly axial extension.

32. A tyre as claimed in claim 16, wherein each of the end blocks (14) and each of the auxiliary blocks (15) have a fourth series (32) of sipes (27) having a sawtoothed profile and disposed parallel to each other according to an extension substantially parallel to the transverse grooves (7).

33. A tyre as claimed in claim 1, wherein the oblique grooves (9) each run in the extension of one of the transverse grooves (7).

34. A tyre as claimed in claim 1, wherein the tread

band pattern (2) comprises a second circumferential portion (3b) having a second geometric module (4b) repeated many times along the circumferential extension direction (X) of the tyre and comprising:

- 5 - an elongated ridge (8) bounded by two grooves (9) oblique to the circumferential extension direction (X) and divided into a plurality of intermediate blocks (10) with respect to an axial extension (Y) of the tread band (1), which are delimited by a plurality of 10 cuts (11) substantially transverse to the elongated ridge (8);
 - at least two shoulder blocks (5) associated with the elongated ridge (8), circumferentially aligned along a side edge (6) of the tread band (1), and confined by 15 grooves (7) oriented transversely of the circumferential extension direction (X) of the tyre.

35. A tyre as claimed in claim 34, wherein the oblique grooves (9) of the second geometric module (4b) 20 converge towards the oblique grooves (9) of the first geometric module (4a).

36. A tyre as claimed in claim 34, wherein the oblique grooves (9) of the second geometric module (4b) are 25 substantially parallel to the oblique grooves (9) of the first geometric module (4a).

37. A tyre as claimed in claim 34, wherein the first geometric module (4a) is circumferentially offset 30 relative to the second geometric module (4b).

38. A tyre as claimed in claim 1, wherein the tread band pattern (2) comprises a second circumferential portion (3b) having:

- 35 - a plurality of shoulder blocks (34) circumferentially

aligned along a side edge (36) of the tread band (1) and delimited by grooves (37) oriented transversely of the circumferential extension (X) of the tyre;
- a plurality of inner blocks (35) distributed along at 5 least one circumferential row (38) separated from the shoulder blocks (34) of the second circumferential portion (3b) by a circumferential shoulder groove (45), said inner blocks (35) being bounded by grooves (40) oriented transversely to the circumferential extension 10 direction (X) of the tyre.

39. A tyre as claimed in claim 38, wherein the second circumferential portion (3b) of the tread band pattern (2) further comprises a second circumferential row (41) 15 of inner blocks (35) disposed in axial side by side relationship with the first row (38) and separated from said first row (38) by a circumferential groove (42).

40. A tyre as claimed in claim 38, wherein the 20 transverse grooves (40) delimiting the inner blocks (35) are circumferentially offset relative to the transverse grooves (37) of the shoulder blocks (34) of the second circumferential portion (3b).

25 41. A tyre as claimed in claim 39, wherein the transverse grooves (40) delimiting the inner blocks (34) of the first row (38) are circumferentially offset relative to the transverse grooves (40) delimiting the inner blocks (35) of the second row (41) and relative 30 to the transverse grooves (37) of the shoulder blocks (34) of the second circumferential portion (3b).

42. A tyre as claimed in claim 38 or 39, wherein the 35 transverse grooves (40) delimiting the inner blocks (35) have first grooves (40a) inclined to the axial

direction (Y) and second grooves (40b) substantially perpendicular to the circumferential extension direction (X) of the tyre.

- 5 43. A tyre as claimed in claim 42, wherein the first grooves (40a) of the inner blocks (35) are inclined to the axial direction (Y) by an angle (α_5) included between 25° and 55°.
- 10 44. A tyre as claimed in claim 42, wherein the second grooves (40b) of the inner blocks (35) are inclined to an axial direction (Y) by an angle (α_6) included between 5° and 20°.
- 15 45. A tyre as claimed in claim 42, wherein the first grooves (40a) and second grooves (40b) delimiting the inner blocks (35) are disposed in an alternate sequence along the respective circumferential row (38; 41).
- 20 46. A tyre as claimed in claim 42, wherein the first grooves (40a) delimiting the inner blocks (35) of the first circumferential row (38) and the first grooves (40a) delimiting the inner blocks (35) of the second circumferential row (41) are parallel to each other.
- 25 47. A tyre as claimed in claim 38 or 39, wherein the inner blocks (35) have a trapezoidal shape.
48. A tyre as claimed in claim 38 or 39, wherein the inner blocks (35) have longitudinal sides (35a) inclined to the circumferential direction (X).
- 30 35 49. A tyre as claimed in claim 48, wherein the longitudinal sides (35a) of the inner blocks (35) are inclined to the circumferential direction (X) by an

angle (α_7) included between 1° and 5°

50. A tyre as claimed in claim 38 or 39 wherein the transverse grooves (37) of the shoulder blocks (34) of the second circumferential portion (3b) are inclined to the circumferential direction (X) by an angle (α_4) included between 75° and 105° .

51. A tyre as claimed in claim 38 or 39, wherein the 10 transverse grooves (37) of the shoulder blocks (34) of the second circumferential portion (3b) and the transverse grooves (7) of the shoulder blocks (5) of the first circumferential portion (3a) converge towards each other.

15 52. A tyre as claimed in claim 38 or 39, wherein the transverse grooves (37) of the shoulder blocks (34) of the second circumferential portion (3b) and the transverse grooves (7) of the shoulder blocks (5) of the first circumferential portion (3a) are substantially parallel.

53. A tyre as claimed in claim 38, wherein the shoulder blocks (34) of the second circumferential portion (3b) 25 have different circumferential sizes from each other.

54. A tyre as claimed in claim 38 or 39, wherein the shoulder blocks (34) of the second circumferential portion (3b) each have a fifth series (47) of sipes 30 (27) having a sawtoothed profile and disposed according to an extension substantially parallel to the transverse grooves (37) delimiting said shoulder blocks (34) of the second circumferential portion (3b).

35 55. A tyre as claimed in claim 42, wherein the inner

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blocks (35) of the first circumferential row (38) each have a sixth series (48) of sipes (27) having a sawtoothed profile and disposed parallel to each other according to an extension oblique to the axial 5 direction (Y).

56. A tyre as claimed in claim 55, wherein the sipes (27) of the sixth series (48) extend parallel to the first grooves (40a) delimiting the inner blocks (35) of 10 the first circumferential row (38).

57. A tyre as claimed in claim 42, wherein the inner blocks (35) of the second circumferential row (41) each have a seventh series (49) of sipes (27) having a 15 sawtoothed profile and disposed parallel to each other according to an extension oblique to the axial direction (Y).

58. A tyre as claimed in claim 57, wherein the sipes (27) of the seventh series (49) extend parallel to the first grooves (40a) delimiting the inner blocks (35) of 20 the second circumferential row (41).

59. A tyre as claimed in claim 39, wherein the number 25 of the shoulder blocks (34) of the second circumferential portion (3b) is the same as the number of the inner blocks (35) of the first circumferential row (38), the same as the number of the inner blocks (35) of the second circumferential row (41), and twice 30 the elongated ridges (8) of the first circumferential portion (3a).